Share an Idea Transport "Move" Expo
Christchurch Art Gallery Foyer and Auditorium
Wednesday 1st June 2011

Transport for a Healthy Future

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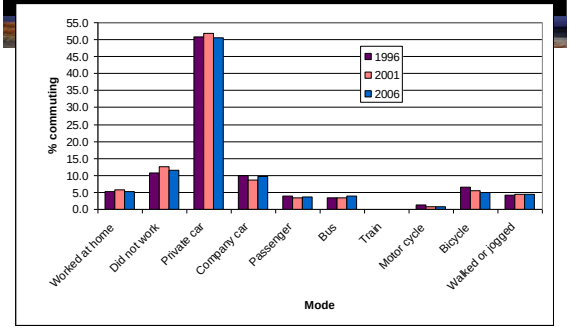
Change in mode

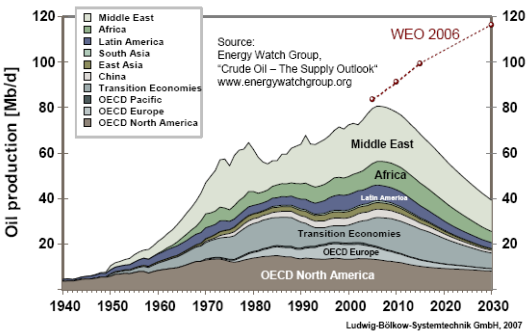
- Cycling
- Walking
- Public Transport
- Reduce SOVs



Climate Change

- Lets assume it is happening

Peak Oil



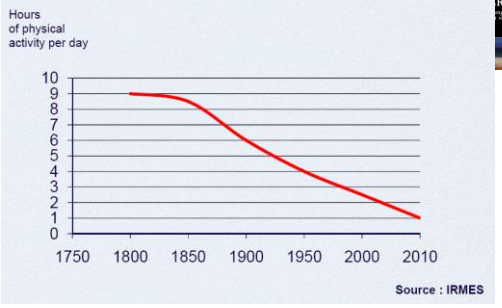
Challenges

- Climate change and peak oil are real problems
- Potentially technology could solve them
  - But:
    - probably won't
    - not in time
    - at a cost society won't want to pay
- But other major problem – HEALTH
  - Technology cannot solve them
  - Behaviour change is the key

The benefits of active & PT travel

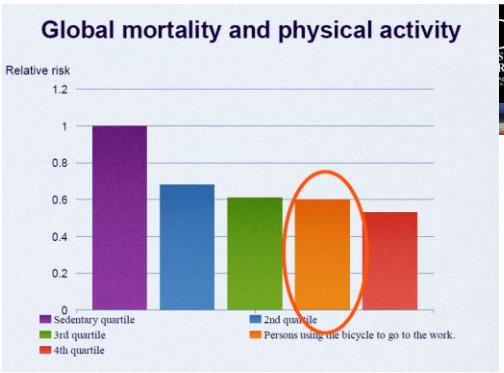
- Physical activity
- Social capital

Evolution of the daily amount of physical activity in France



Source: Saladin, 2009, Bicycles, kitchen-gardens, health, economy, and urban planning. Velo-City Conference, Brussels.

Global mortality and physical activity



Source: Saladin, 2009, Bicycles, kitchen-gardens, health, economy, and urban planning, Velo-City Conference, Brussels.

The benefits of active travel

- Are transport-active countries healthier?

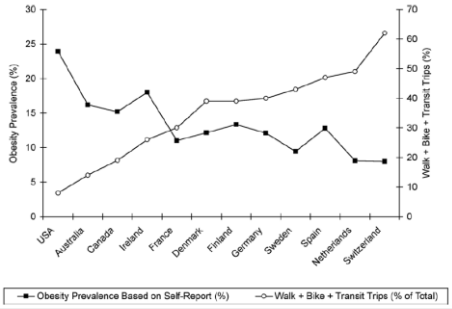
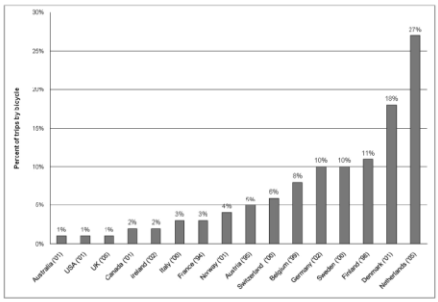


Figure 2 — Obesity (BMI ≥ 30 kg · m^{-2}) prevalence and rates of active transportation (defined as the combined percentage of trips taken by walking, bicycling, and public transit) in countries of Europe, North America, and Australia. BMI was computed from self-reported height and weight. Data were obtained from national surveys of travel behavior and health indicators conducted between 1994 and 2006 (see text for details).

Bassett et al, 2008, Walking, Cycling, and Obesity Rates in Europe, North America, and Australia. *Journal of Physical Activity & Health* 5 (6):795-814.

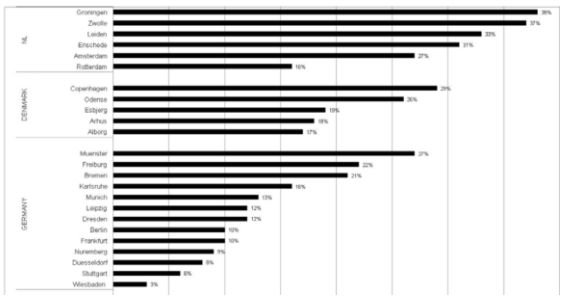
Who cycles most?



Sources: European Union (2003); German Federal Ministry of Transport (2003); U.S. Department of Transportation (2003); European Conference of the Ministers of Transport (2004); Department for Transport (2005); Organisation for Economic Cooperation and Development (2005); Netherlands Ministry of Transport (2006); Australian Bureau of Statistics (2007)

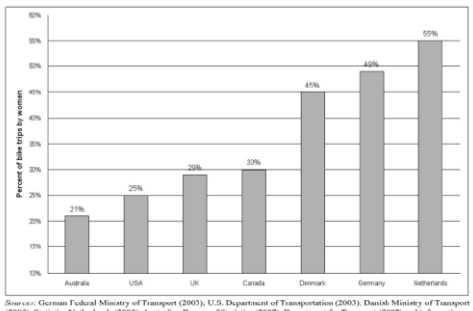
Figure 1. Bicycle share of trips in Europe, North America and Australia (percentage of total trips by bicycle).

Pucher, John, and Ralph Buehler. 2008. Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews* 28 (4).



Pucher, John, and Ralph Buehler. 2008. Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews* 28 (4).

Only for blokes?

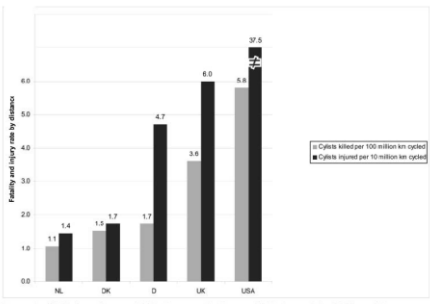


Sources: German Federal Ministry of Transport (2003); U.S. Department of Transportation (2003); Danish Ministry of Transport (2005); Statistics Netherlands (2005); Australian Bureau of Statistics (2007); Department for Transport (2007) and information provided directly by bike planners in Canadian provinces and cities

Figure 8. Women's share of total bike trips in Australia, the USA, the UK, Canada, Denmark, Germany and the Netherlands (2000–2005).

Pucher, John, and Ralph Buehler. 2008. Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews* 28 (4).

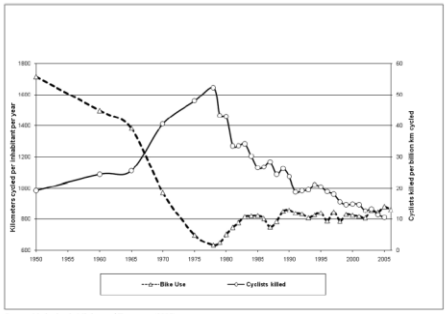
Cycling is dangerous?



Sources: Danish Ministry of Transport (2007); Department for Transport (2007); German Federal Ministry of Transport (2007); Netherlands Ministry of Transport (2007); U.S. Department of Transportation (2007)

Figure 10. Fatality rates and non-fatal injury rates in the Netherlands, Denmark, Germany, the UK and the USA (2004–2005).

Pucher, John, and Ralph Buehler. 2008. Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews* 28 (4).



Source: Netherlands Ministry of Transport (2007)

Figure 12. Inverse trends in cycling fatality rates and annual kilometres cycled per inhabitant in the Netherlands (1950–2005).

Pucher, John, and Ralph Buehler. 2008. Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany. *Transport Reviews* 28 (4).

Overall health impacts

- Multiple health impacts
  - Pollution dose (0.8-40 days lost)
  - Traffic accidents (5-9 days lost)
  - Physical activity (3-14 months gained)
- Plus, societal benefits
  - Reduced congestion, RTAs, pollution, greenhouse gases
- "*On average, the estimated health benefits of cycling were substantially larger than the risks relative to car driving for individuals shifting their mode of transport*"
  - de Hartog *et al*, 2010, Do the health benefits of cycling outweigh the risks? EHP 118, 8, 1109-1116.

Economics

Health benefit	Values PER YEAR of cycling
Value of loss of life	£11.16 for 16 – 44 year olds
	£99.53 for 45 - 64 year olds
	£242.07 for 65 year olds and over
	£58.77 average
NHS savings	£28.30 for all cyclists
Productivity gains	£47.68 all cyclists
Total health benefits	£87.06 for 16 -44 year olds
	£175.51 for 45 – 64 year olds
	£159.48 average
Child health and obesity	Not quantified

Source: SQW

- Source: Cycling England, 2007, Valuing the Benefits of Cycling

Economics

- Health, productivity, pollution, congestion etc
- 3 times per week for 30 yrs
- Every £10,000 ($20,000) invested needs to generate one extra cyclist, each year, over a 30 year period in order to break even

- Source: Cycling England, 2007, Valuing the Benefits of Cycling

What do we need to do?

- "*Substantial increases in bicycling require an integrated package of many different, complementary interventions, including infrastructure provision and pro-bicycle programs, supportive land use planning, and restrictions on car use*"

- Pucher *et al*, 2010. Infrastructure, programs, and policies to increase bicycling: An international review. *Preventive Medicine* 50 (Supplement 1):S106-S125.

Cycle Demonstration Towns

Cycling England

Investment in 6 towns

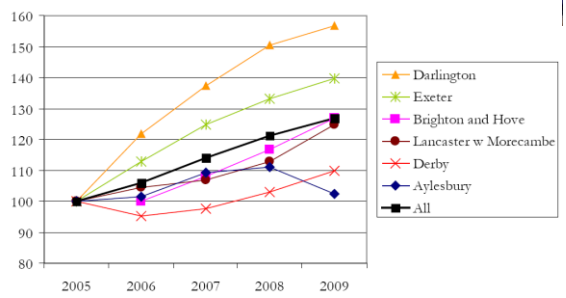
- Aylesbury
- Brighton & Hove
- Darlington
- Derby
- Exeter
- Lancaster and Morecambe

£5 per head matched by TLAs

Cycle Demonstration Towns – 3 yr results

- average increase in cycling across all six towns of 27%
  - result of more people starting to cycle, or returning to cycling again, not just the result of cyclists using their bikes for more trips
- Cycling to school has more than doubled where towns invested most in children
- Cycling investment generates town-wide increases in physical activity
- These results were not found in comparable towns, & growth matches the cycling growth rates in London
- Investment in cycling pays back at least 3:1
  - each £1 invested, value of decreased mortality is £2.59

Figure 12: Change in cycling levels over time in each town, relative to 2005 baseline (automatic cycle count data)



Cycle Demonstration Towns – 3 yr results

- The programmes …can in no way be considered to have transformed conditions for cycling to the point where they are as good as in the most 'cycle friendly' European towns and cities …But the evidence …suggests that a start has been made – in brief, that the six towns have achieved 'lift-off' for cycling.

  - Sloman *et al*, 2009, *Analysis and synthesis of evidence on the effects of investment in six Cycling Demonstration Towns* Report for Department for Transport and Cycling England

What sort of cycle infrastructure?

1. **What do non-cyclists want?**

- Separation from traffic
  - Significantly more attractive than anything else
- Consistency at junctions

  - Kingham S, Koorey G and Taylor K, 2011, Assessment of the type of cycle infrastructure required to attract new cyclists. NZTA Report TRV08/06.

What sort of cycle infrastructure?

2. **What is safest?**

- Some research argues against separation

But:

- We HAVE to attract new cyclists (overall health benefit far greater than debatable increased accident risk)
- More cyclists = safer
- Pollution exposure significantly reduced with separation
  - Cyclist exposure on road less than car drivers
  - Behind parked cars 50% less than on road
    - Kingham S, Longley I, Salmond J, Pattinson W and Shrestha K, 2011, Determination of personal exposure to traffic pollution while travelling by different modes. NZTA Report TRV08/01

What <u>can't</u> cycling do?

- Carry all our freight
- Carry all our people
- Solve climate change
- Solve sedentary-related health problems

What <u>can</u> cycling do?

- Carry a lot more people
- Reduce congestion
  - Free roads up for freight
  - Free roads up for non-cyclable journeys
- Help reduce CO_2 emissions
- Reduce pollution emissions (PM, CO, NO_2, UFP etc.)
- Improve physical activity and reduce sedentary-related health problems
- Save $$

What about PT?

- Activity levels
  - PT travel includes walking
  - Canadian research shows *"a transit trip involves 1250 steps, required to access and egress the network as well as to transfer between routes or modes"*
  - A round trip (2500 steps) "*account for 25% of the recommended volume of physical activity per day*"
    - Morency *et al*, 2011, Walking to transit: An unexpected source of physical activity. Transport Policy, *in press*
- Social capital

Economic benefits of PT

- Every US$1bn spent on PT produced 16,419 job months
- Every US$1bn spent on highway infrastructure produced 8,781 job months
  - 'What we learned from the stimulus' report (report based on US Congress House of Representatives Transportation and Infrastructure committee) Jan 2010.

Take home messages

- Active travel and PT is good for health
  - Lots of evidence
- Active travel and PT is good economic sense
  - Lots of evidence
- Safety is important, but not at expense of broader *health* benefits
  - More cyclists and pedestrians is crucial
- Don't over engineer cycle infrastructure
  - Consistency is important